

REMARKS

Claims 1-8 are pending.

Claim 4 is cancelled. Claims 1, 3, 6 and 8 are amended. Claims 9-14 are added.

New claim 10 sets forth that the transporting section is further provided with a pair of small rollers that are provided facing the surface supporting section. The second embodiment of the invention describes that the surface supporting roller section is formed by a large roller and a pair of small rollers. Therefore, there is support for the subject matter of new claim 10.

Claims 1-5 and 8 are rejected as being anticipated under §102(e) by Aoyama, et al., U.S. 7,278,203.

Claim 1 has been amended to add the feature that the "IC chips are mounted on the film substrate by one of a plurality of synchronized roller sections provided along the direction in which the film substrate is transported". Claim 3 is amended to add all the features of cancelled claim 4 and the feature "a plurality of the synchronized roller sections are provided along the direction in which the film substrate is transported by the transporting section". Claim 8 is amended to add the feature "the IC chip mounting section is provided with a plurality of the synchronized roller sections along the direction in which the film substrate is transported by the transporting section".

Support for these amendments is found, for example, at lines 7-11 on page 10 of the Specification and Fig. 4.

Claim 8 also has been amended to add the feature "protruding portions are formed at equal intervals in the circumferential direction". Support for this amendment is found at lines 4-5 on page 23 of the Specification and Fig. 17.

Claim 6 is amended to add the feature "the surface supporting section has an arc shape protruding toward the IC chip mounting section". Support for this amendment is found in Figs. 13 and 16.

New claims 9-14 are added. Support for new claims 9 and 11 is found at lines 4-12 on page 14 and lines 4-9 on page 19 of the Specification. Support for new claim 10 is found at lines 20-23 on page 20 of the Specification and Fig. 13. Support for new claim 12 is found at lines 20-22 on page 23 of the Specification. Support for new claim 13 is found at lines 17-22 on page 13 of the Specification.

Regarding independent claims 1, 3 and 8, amended method claim 1 has the feature "IC chips are mounted on the film substrate by one of a plurality of synchronized roller sections provided along the direction in which the film substrate is transported". Apparatus claims 3 and 8 have the feature "the IC chip mounting section is provided with a plurality of the synchronized roller sections along the direction in which the film substrate is transported by the transporting section".

In the invention IC chips are mounted on antenna circuits on a film substrate from a plurality of synchronized rollers. This is advantageous in that it is possible to shorten the interval between mounting IC chips. Accordingly, the manufacturing of IC chip packaged devices can be performed even more efficiently (see lines 15-19 at page 4 of the Specification).

In contrast, that apparatus of Aoyama includes two transfer engines 6. Each transfer engine 6 includes three coaxial revolvers 10. However, the coaxial revolvers 10 of the two transfer engines 6 are formed so as to be coaxial with each other around the horizontal axis CL (see lines 41-43 in column 4 of Aoyama).

The coaxial revolvers 10 of Aoyama are different in arrangement and operation as compared to the synchronized roller sections of the present invention. In Aoyama it appears that the function performed by one synchronized roller section of the present invention is performed by the two transfer engines 6. This is a more complicated arrangement.

Aoyama does not disclose or suggest the above-described features of independent claims 1, 3 and 8. Furthermore, the above-referenced advantageous effects of the present invention cannot be obtained by Aoyama. Therefore, claims 1, 3 and 8 are patentable and should be allowed.

Each of claims 5, 9 and 11, which respectively depend from claims 1, 3 and 8, and new claims 9 and 11, has the feature "of the plurality of synchronized roller sections, at least one is a dedicated backup synchronized roller section that mounts an IC chip on the antenna circuit where an IC chip has not been mounted by the other synchronized roller sections".

If it is not possible for another synchronized roller to mount an IC chip on an antenna circuit of the film substrate, the dedicated backup synchronized roller mounts the IC chip. As a result, the occurrence of IC chip packaged devices on which no IC chip has been packaged is controlled and the manufacturing yield of the IC chip packaged devices is improved (see line 25 at page 4 to line 5 at page 5 of the Specification).

In the present invention, as described above, since the plurality of the synchronized roller sections are provided along the direction in which the film substrate is transported, at least one of the plurality of synchronized roller sections can serve as the dedicated backup synchronized roller section.

In contrast, in Aoyama, since the coaxial revolvers 10 of the two transfer engines 6 are formed so as to be coaxial with each other around the horizontal axis CL, it is impossible that at least one of the transfer engines 6 can serve as a dedicated backup transfer engine. Aoyama does not disclose or suggest the above-described features of claims 5, 9 and 11. Furthermore, the above-described advantageous effects of the present invention cannot be obtained by Aoyama. Therefore, these claims are patentable and should be allowed.

Claims 8 sets forth the feature "protruding portions are formed at equal intervals in the circumferential direction". In the present invention, since the protruding portions of the roller of the synchronized roller section are formed at equal intervals in the circumferential direction, all of the protruding portions are rotated when the roller of the synchronized roller section rotates. Therefore, it is possible that all of the protruding portions are controlled by one controller.

In contrast, in Aoyama, with respect to each of the end-effectors 71-76, timing adjustment is independently carried out for the reception and transfer on the revolving orbit, and

period change control is independently carried out for speed adjustment at that time (see lines 59-63 at column 4 of Aoyama). That is, in Aoyama, controllers are needed for every end-effector. Aoyama does not disclose or suggest the above-described feature of claim 8. Furthermore, the above-referenced advantageous effects of the present invention cannot be obtained by Aoyama. Accordingly, this claim also is patentable and should be allowed.

New claim 12, which depends from claim 8, has the feature "wherein the axis of rotation of the roller of the synchronized roller section is kept to a state parallel to the transported film substrate and vertical to the direction where the film substrate is transported, and the synchronized roller section mounts IC chips on the film substrate without moving up and down". According to the synchronized roller section that is formed in the above-described manner, it is not necessary to move the roller of the synchronized roller section in a downward direction at the mounting position of the IC chips. As a result, there is no up and down movement of the roller of the synchronized roller section and the mounting position of the IC chips is stable (see line 25 at page 23 to line 5 at page 24 of the Specification).

Aoyama does not disclose or suggest the above-described feature of claim 12. Furthermore, the above-referenced advantageous effects of the present invention cannot be obtained by Aoyama. Accordingly, claim 12 also is patentable and should be allowed.

New claim 13, which depends from claim 8, has the feature "as a result of an index movement, the IC chip supply section supplies the IC chips to the synchronized roller section in a state where the synchronized roller section stops, and the synchronized roller section mounts IC chips on the film substrate in a state where the roller of the synchronized roller section rotates".

In contrast, the end-effectors 71-76 of Aoyama receive chips 2 from the first carrier 3 while they are revolving around the horizontal axis CL (see lines 50-54 at column 4 of Aoyama). That is, in Aoyama, the first carrier 3 supplies the chips 2 to the end-effectors 71-76 of the engines 6 in a state where the engines 6 are moving. Aoyama neither discloses nor suggests the above-described feature of claim 13. Furthermore, the above-described advantageous effects of the present

invention cannot be obtained by Aoyama. Accordingly, this claim also is patentable and should be allowed.

New claim 14 depends from claim 1 and sets forth that the roller sections are disposed on a common circumferential surface. This feature is not found in Aoyama. Therefore, new claim 14 also is allowable.

Claims 6 and 7 are rejected over Aoyama in view of Imanishi, et al., U.S. 6,332,268.

Regarding independent claim 6 from which claim 7 depends, claim 6 has the features "a portion of the surface supporting section where the film substrate is supported on its surface has an arc protruding upward, and the IC chip is mounted on the mounting position of the film substrate at a top of the arc protruding upward". According to the features, it is possible that the film substrate is transported in a smooth line. Furthermore, the IC chip is mounted on the mounting position of the film substrate at the top of the arc protruding upward. That is, the IC chip is mounted on the film substrate when the mounting position of the film substrate positions at the top of the arc protruding upward. Therefore, since the mounting position of the film substrate becomes clear, it is possible that IC chips are securely mounted on the mounting position the film substrate.

The Examiner states that the surface supporting section of the present invention has been disclosed in Imanishi. However, while a portion of the surface supporting section where the film substrate is supported on its surface has an arc shape protruding upward, the vacuum suction unit 61 of Imanishi has a plate shape.

The combination of Aoyama and Imanishi does not disclose or suggest the above-described features of claim 6. Furthermore, the above-referenced advantageous effects of the present invention cannot be obtained by Aoyama and Imanishi. Accordingly, claim 6 patentably distinguishes over the combination of references and should be allowed.

Claim 7 depends from claim 6. In view of the allowability of claim 6, claim 7 also should be allowed.

Prompt and favorable action is requested.

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